

CLAIMS

What is claimed is:

1. An apparatus to drive a roller used in an electrophotographic printer having a photoconductive drum, comprising:

a drum gear having gear teeth and coaxially installed on the photoconductive drum to be rotated therewith; and

a first passive-roller in contact with and rotated by the photoconductive drum and having a first passive roller gear installed thereon and in contact with the drum gear to passively rotate,

wherein the first passive roller gear is made of a material having a lower hardness than the drum gear to absorb impulses due to a pitch error from gear teeth of the drum gear and the first passive roller gear.

2. The apparatus according to claim 1, wherein the first passive roller gear is made of a polyester material or an elastomer series material.

3. The apparatus according to claim 1, wherein the first passive roller is a charging roller to charge a surface of the photoconductive drum to a predetermined voltage.

4. The apparatus according to claim 2, wherein the first passive roller is a charging roller to charge a surface of the photoconductive drum to a predetermined voltage.

5. The apparatus according to claim 1, wherein the first passive roller gear has a Shore D hardness ranging from 50D to 70D.

6. The apparatus according to claim 2, wherein the first passive roller gear has a Shore D hardness ranging from 50D to 70D.

7. The apparatus according to claim 1, further comprising a second passive roller gear coaxially installed on a second passive roller and in contact with and rotated by the first passive roller to cooperate with the first passive roller gear.

8. The apparatus according to claim 2, further comprising a second passive roller gear coaxially installed on a second passive roller and in contact with and rotated by the first passive roller to cooperate with the first passive roller gear.

9. The apparatus according to claim 7, wherein the second passive roller is a cleaning roller to clean a surface of the first passive roller.

10. The apparatus according to claim 7, wherein the second passive roller gear is made of a polyester material or an elastomer series material.

11. An electrophotographic image forming apparatus forming an image on a recording medium including a photoconductive drum forming a nip with a first passive roller, comprising:

a drum gear installed on the photoconductive drum to be rotated therewith; and

a first passive roller gear installed on the first passive roller to be rotated therewith and in contact with the drum gear, the first passive roller gear being formed of a material that is softer than the material of the drum gear such that impulses from pitches between the drum gear and the first passive roller gear are absorbed to prevent velocity variations between the photoconductive drum and the first passive roller at the nip therebetween.

12. The apparatus according to claim 11, wherein the first passive roller gear is made of a polyester material or an elastomer series material.

13. The apparatus according to claim 11, wherein the first passive roller is a charging roller.

14. The apparatus according to claim 13, wherein the first passive roller gear is made of a polyester material or an elastomer series material.

15. The apparatus according to claim 12, wherein the first passive roller gear has a Shore D hardness ranging from 50D to 70D.

16. The apparatus according to claim 14, wherein the first passive roller gear has a Shore D hardness ranging from 50D to 70D.

17. The apparatus according to claim 11, further comprising:
a second passive roller forming a second nip with the first passive roller and to be rotated therewith; and
a second passive roller gear coaxially installed on the second passive roller and in contact with and rotated by the first passive roller gear.

18. The apparatus according to claim 17, wherein the second passive roller gear is made of a polyester material or an elastomer series material.

19. The apparatus according to claim 17, wherein the second passive roller is a cleaning roller.

20. The apparatus according to claim 19, wherein the second passive roller gear is made of a polyester material or an elastomer series material.

21. The apparatus according to claim 11, wherein the drum gear is coaxially installed on the photoconductive drum so that the drum gear and the photoconductive drum rotate on the same axis.

22. The apparatus according to claim 11, wherein the first passive roller gear is coaxially installed on the first passive roller so that the first passive roller gear and the first passive roller rotate on the same axis.

23. An image forming apparatus comprising:
a photoconductive drum;
a charging roller to charge a surface of the photoconductive drum;
a drum gear rotating the photoconductive drum; and
a passive gear in contact with the drum gear to rotate the charging roller, and having a lower hardness than the drum gear.

24. The apparatus according to claim 23, wherein the photoconductive drum and the charging roller form a nip therebetween, and the drum gear directly contacts the passive gear.

25. The apparatus according to claim 23, further comprising:

a second passive gear in contact with the passive gear to rotate together with the passive gear, and having a lower hardness than the drum gear.

26. The apparatus according to claim 24, wherein the passive gear comprises a first portion contacting the drum gear and a second portion contacting the second passive gear.

27. The apparatus according to claim 24, wherein the passive gear is disposed between the drum gear and the second passive gear.